

Listing of Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 1. (previously presented) A transmission power control method for
2 controlling the power to transmit to a distant party, comprising the
3 steps of:

4 controlling an adjustable digital-to-analog converter for
5 generating an analog baseband signal to be input to a
6 modulator for frequency-converting a transmission signal to
7 a signal in an IF band, and
8 controlling a plurality of variable power amplifiers for variably
9 amplifying the transmission signal modulated by the
10 modulator.

1 2. (previously presented) A transmission power control method
2 according to claim 1, wherein a control ratio of the variable power
3 amplifiers is modified and at least one of series and parallel control
4 in a control range is made in the controlling a plurality of variable
5 power amplifiers step.

1 3. (original) A transmission power control method according claim
2 2, further comprising:
3 a detection step of detecting a state of at least one of a local
4 station and a distant station; and
5 a modification step of modifying the control ratio according to
6 the detected state.

1 4. (previously presented) A transmission power control method
2 according to claim 3, wherein a plurality of states of at least one of
3 the local station and the destination station are detected in the
4 detection step, and wherein the control ratio is modified by using
5 fuzzy control rules and fuzzy inference that are based on the plurality
6 of states in the modification step.

1 5. (original) A transmission power control method according to
2 claim 3, wherein the control ratio according to the state of at least

3 one of the local station and the distant station is adaptively modified
4 in the modification step.

1 6. (original) A transmission power control method according to
2 claim 1, wherein a control sensitivity of each of the plurality of
3 variable power amplifiers differs from each other.

1 7. (previously presented) A transmission power control method for
2 controlling a power to transmit to a distant party, comprising the
3 steps of:
4 controlling a plurality of voltage controllers; and
5 controlling, using said plurality of voltage controllers, a power
6 amplifier for amplifying a transmission signal via separate
7 bias systems.

1 8. (previously presented) A transmission power control method
2 according to claim 7, wherein a control ratio of the voltage
3 controllers is modified and at least one of series and parallel control
4 in a control range is made in the voltage controller controlling step.

1 9. (previously presented) A transmission power control method
2 according to claim 8, further comprising:
3 a detection step of detecting a state of at least one of a local
4 station and a distant station; and
5 a modification step of modifying the control ratio according to
6 the detected state.

1 10. (previously presented) A transmission power control method
2 according to claim 9, wherein a plurality of states of at least one of
3 the local station and the destination station are
4 detected in the detection step, and wherein the control ratio is
5 modified by using fuzzy control rules and fuzzy inference that are
6 based on the plurality of states in the modification step.

1 11. (original) A transmission power control method according to
2 claim 9, wherein the control ratio according to the state of at least
3 one of a local station and a distant station is adaptively modified in
4 the modification step.

1 12. (original) A transmission power control method according to
2 claim 7, wherein a control sensitivity of each of the plurality of
3 variable power amplifiers differs from each other.

1 13. (previously presented) A radio communications apparatus
2 equipped with a transmission power control feature for controlling a
3 transmission power to be transmitted to a distant station, comprising:
4 a variable power amplification unit including:
5 an adjustable digital-to-analog converter for generating an
6 analog transmission signal,
7 a modulator for inputting said analog transmission signal
8 and frequency-converting the transmission signal to a
9 signal in an IF band,
10 and a plurality of variable power amplifiers for variably
11 amplifying the transmission signal modulated by the
12 modulator; and
13 a variable power amplification control unit for controlling the
14 variable power amplification unit.

1 14. (previously presented) Radio communications apparatus
2 according to claim 13, wherein the variable power amplification control
3 unit modifies a control ratio of the variable power amplifiers and
4 makes at least one of series and parallel control in the control range.

1 15. (previously presented) Radio communications apparatus
2 according to claim 14, further comprising:
3 a state detection unit for detecting a state of at least one of a
4 local station and a distant station, wherein
5 the variable power amplification control unit modifies the control
6 ratio according to the detected state.

1 16. (previously presented) Radio communications apparatus
2 according to claim 15, wherein the variable power amplification control
3 unit modifies the control ratio based on fuzzy control rules and fuzzy
4 inference.

1 17. (original) Radio communications apparatus according to claim
2 15, wherein the variable power amplification control unit adaptively
3 modifies the control ratio according to the state of at least one of a
4 local station and a distant station.

1 18. (original) Radio communications apparatus according to claim
2 13, wherein a control sensitivity of each of the plurality of variable
3 power amplifiers differs from each other.

1 19. (previously presented) A radio communications apparatus
2 equipped with a transmission power control feature for controlling a
3 transmission power to be transmitted to a distant station, comprising:
4 a power amplifier for amplifying a transmission signal;
5 a plurality of voltage controllers for controlling the power
6 amplifier via separate bias systems; and
7 a control unit for controlling the plurality of voltage
8 controllers .

1 20. (original) Radio communications apparatus according to claim
2 19, wherein the control unit for controlling voltage controllers
3 modifies a control ratio of the voltage controllers and make at least
4 one of series and parallel control in the control range.

1 21. (original) Radio communications apparatus according to claim
2 20, further comprising:
3 a detection unit for detecting a state of at least one of a local
4 station and a distant station wherein
5 the control unit for controlling voltage controllers modifies the
6 control ratio according to the detected state.

1 22. (previously presented) Radio communications apparatus
2 according to claim 21, wherein the control unit for controlling the
3 voltage controllers modifies the control ratio based on fuzzy control
4 rules and fuzzy inference.

1 23. (original) Radio communications apparatus according to claim
2 21, wherein the control unit for controlling the voltage controllers

3 adaptively modifies the control ratio according to the state of at
least one of a local station and a distant station.

1 24. (original) Radio communications apparatus according to claim
2 19, wherein the control sensitivity of each of the plurality of
3 variable power amplifiers differs from each other.

1 25. (new) A transmission power control method for controlling the
2 power to transmit to a distant party, comprising the steps of:
3 controlling an adjustable digital-to-analog converter for
4 generating an analog baseband signal to be input to a
5 modulator for frequency-converting a transmission signal to
6 a signal in an IF band;
7 controlling first and second variable power amplifiers, connected
8 in series with each other, for variably amplifying the
9 transmission signal modulated by the modulator;
10 a detection step of detecting a state of at least one of a local
11 station and a distant station; and
12 a modification step of modifying control ratios of the first and
13 the second variable power amplifiers according to the
14 detected state;
15 wherein at least one of series and parallel control in a control
16 range is made in the controlling the first and second
17 variable power amplifiers step, and wherein, in the series
18 control, the control ratio of the first variable amplifier
19 is set to 1 and the control ratio of the second variable
20 amplifier is set to 0, and wherein, in the parallel control,
21 a sum of the control ratios of the first and second variable
22 amplifiers is set to 1.

1 26. (new) A transmission power control method according to claim
2 25, wherein a plurality of states of at least one of the local station
3 and the destination station are detected in the detection step, and
4 wherein the control ratios are modified by using fuzzy control rules

5 and fuzzy inference that are based on the plurality of states in the
6 modification step.

1 27. (new) A transmission power control method according to claim
2 25, wherein the control ratios according to the state of at least one
3 of the local station and the distant station is adaptively modified in
4 the modification step.

1 28. (new) A transmission power control method according to claim
2 25, wherein a control sensitivity of each of the first and second
3 variable power amplifiers differs from each other.

1 29. (new) A transmission power control method for controlling a
2 power to transmit to a distant party, comprising the steps of:
3 controlling first and second voltage controllers;
4 controlling, using said first and second voltage controllers, a
5 power amplifier for amplifying a transmission signal;
6 the first voltage controller controlling a collector voltage of
7 the power amplifier, the second voltage controller
8 controlling a base voltage of the power amplifier;
9 a detection step of detecting a state of at least one of a local
10 station and a distant station; and
11 a modification step of modifying control ratios of the first and
12 the second voltage controllers according to the detected
13 state;
14 wherein at least one of series and parallel control in a control
15 range is made in the voltage controller controlling step,
16 wherein, in the series control, the control ratio of one of
17 the voltage amplifiers controllers is set to 1 and the
18 control ratio of the other is set 0, and wherein, in the
19 parallel control, a sum of the control ratios of the first
20 and second voltage controllers is set to 1.

1 30. (new) A transmission power control method according to claim
2 29, wherein a plurality of states of at least one of the local station
3 and the destination station are detected in the detection step, and
4 wherein the control ratios are modified by using fuzzy control rules
5 and fuzzy inference that are based on the plurality of states in the
6 modification step.

1 31. (new) A transmission power control method according to
2 claim 29, wherein the control ratios according to the state of at least
3 one of a local station and a distant station are adaptively modified in
4 the modification step.

1 32. (new) A radio communication apparatus comprising:
2 a first variable power amplifier;
3 a second variable power amplifier connected in series with said
4 first variable power amplifier;
5 an adjustable digital-to-analog converter;
6 a modulator;
7 means for controlling the adjustable digital-to-analog converter
8 for generating an analog baseband signal to be input to the
9 modulator for frequency-converting a transmission signal to
10 a signal in an IF band;
11 means for controlling first and second variable power amplifiers
12 for variably amplifying the transmission signal modulated by
13 the modulator;
14 a detection unit for detecting a state of at least one of a local
15 station and a distant station; and
16 means for modifying control ratios of the first and the second
17 variable power amplifiers according to the detected state,
18 wherein at least one of series and parallel control in a control
19 range is utilized by the means for controlling the first and
20 second variable power amplifiers, and wherein, in the series

21 control, the control ratio of the first variable amplifier
22 is set to 1 and the control ratio of the second variable
23 amplifier is set to 0, and wherein, in the parallel control,
24 a sum of the control ratios of the first and second variable
25 amplifiers is set to 1.

1 33. (new) The apparatus of claim 32, wherein a plurality of states
2 of at least one of the local station and the destination station are
3 detected by the detection unit, and wherein the control ratios are
4 modified by using fuzzy control rules and fuzzy inference that are
5 based on the plurality of states in the means for modifying.

1 34. (new) The apparatus of claim 32, wherein the control ratios
2 according to the state of at least one of the local station and the
3 distant station is adaptively modified in the means for modifying.

1 35. (new) The apparatus of claim 32, wherein a control sensitivity
2 of each of the first and second variable power amplifiers differs from
3 each other.

1 36. (new) A radio communication apparatus comprising:
2 a first voltage controller;
3 a second voltage controller;
4 means for controlling said first and said second voltage
5 controllers;
6 a power amplifier for amplifying a transmission signal;
7 means for controlling, using said first and second voltage
8 controllers, said power amplifier, wherein the first voltage
9 controller controls a collector voltage of the power
10 amplifier and the second voltage controller controls a base
11 voltage of the power amplifier;

12 a detection unit for detecting a state of at least one of a local
13 station and a distant station; and
14 means for modifying control ratios of the first and the second
15 voltage controllers according to the detected state;
16 wherein at least one of series and parallel control in a control
17 range is made in the means for controlling said first and
18 said second voltage controllers, wherein, in the series
19 control, the control ratio of one of the voltage controllers
20 is set to 1 and the control ratio of the other is set 0, and
21 wherein, in the parallel control, a sum of the control
22 ratios of the first and second voltage controllers is set to
23 1.

1 37. (new) The apparatus of claim 36, wherein a plurality of states
2 of at least one of the local station and the destination station are
3 detected by the detection unit, and wherein the control ratios are
4 modified by using fuzzy control rules and fuzzy inference that are made
5 based on the plurality of states by the means for modifying.

1 38. (new) The apparatus of claim 36, wherein the control ratios
2 according to the state of at least one of a local station and a distant
station are adaptively modified by the means for modifying.